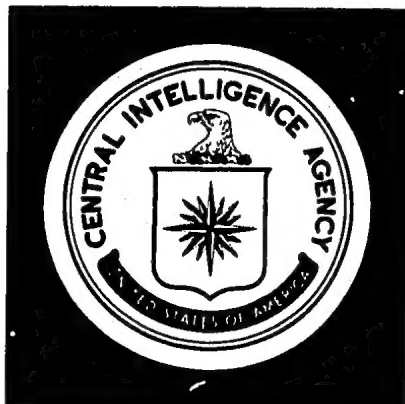


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DIRECTORATE OF  
INTELLIGENCE

# Intelligence Memorandum

*Petroleum in North Vietnam: A Review of Developments  
in 1971*

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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
March 1972

INTELLIGENCE MEMORANDUM

PETROLEUM IN NORTH VIETNAM:  
A REVIEW OF DEVELOPMENTS IN 1971

Summary

1. North Vietnam's petroleum supply position improved during 1971. Imports, mostly diesel fuel and gasoline, advanced 8% to a record 406,000 metric tons, almost all from the USSR. Consumption probably increased slightly during the year with no evidence of shortages. Stocks on 1 January 1972 were somewhat higher than at the beginning of 1971 and appeared to be sufficient for about three months' supply.

2. Storage and distribution facilities also were expanded. A major 250 kilometer (km) pipeline network linking Hanoi with the Vinh area was nearing completion in early 1972. Construction of the dual pipeline system westward from Bai Chai (near Haiphong) continued toward Hanoi. When the two systems are joined near the capital, North Vietnam will be able to import petroleum at Bai Chai port and transport it by pipeline into the Laotian infiltration system. Capacity of the principal storage facilities in North Vietnam was increased by more than 30% in 1971, principally at Hanoi and Haiphong. Dispersed storage sites also increased, primarily along North Vietnam's proliferating pipelines. Total storage capacity throughout the country is now almost two and one-half times the pre-bombing level and is less vulnerable to attack.

3. Further improvement of North Vietnam's petroleum position is expected in 1972. Imports probably will be higher than in 1971. Indeed, during the first two months of 1972 they were more than 60% above the comparable 1971 level. Discharging of tankers into the pipeline system at Bai Chai could begin when port facilities are completed. Current exploration

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for oil, apparently being conducted by Soviet technicians, is unlikely to result in production of crude oil in commercial quantities over the next several years, and meanwhile the country will continue to depend on imports. The USSR will almost certainly continue to meet North Vietnam's basic requirements.

Discussion

Imports

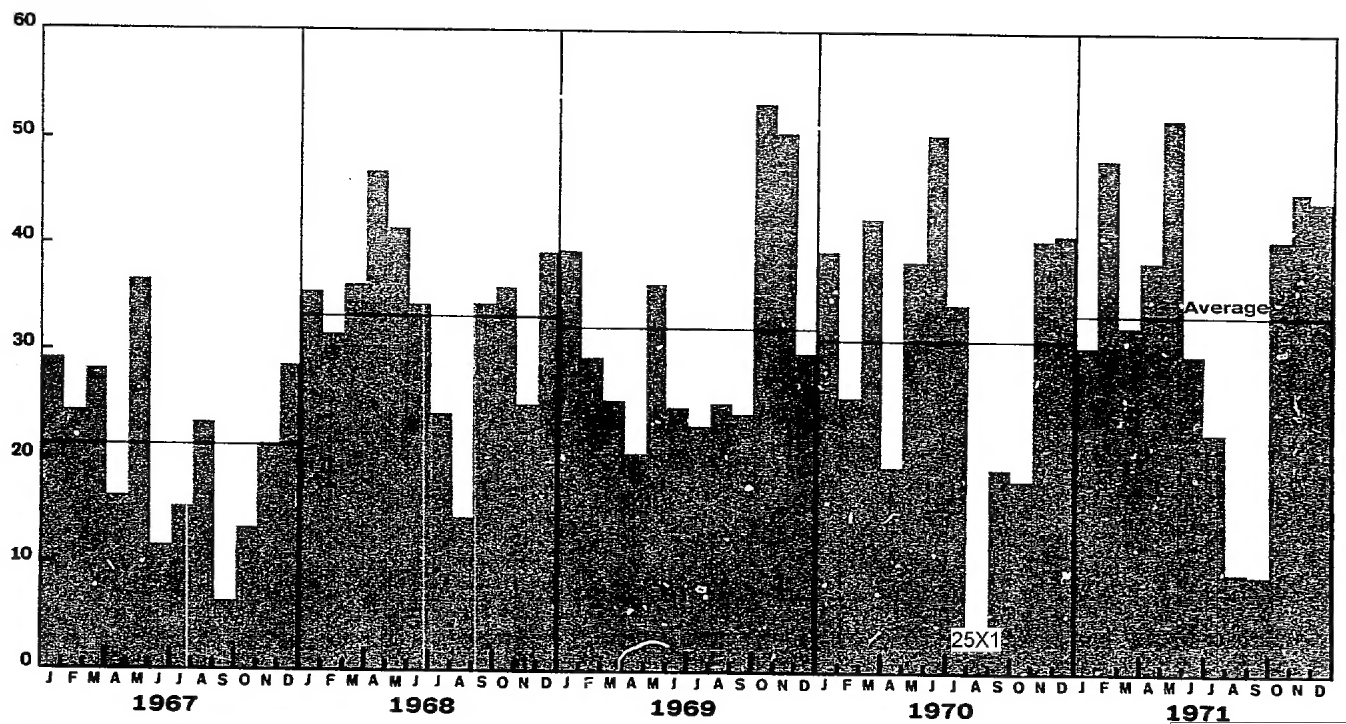
4. The record volume of imported petroleum products, slightly above the 1968 high, accounted for 17% of the volume and 2% of the value of total seaborne imports. Receipts of petroleum followed the same seasonal pattern as in previous years (see the chart), peaking at 52,100 tons in May and falling to 9,300 tons in September  Petroleum deliveries

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### North Vietnam: Imports of Petroleum, by Month

Thousand Metric Tons



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invariably decline during the third quarter when Soviet tankers are diverted to the Northern Sea Route. The decline was accentuated in 1971, however, by the limited gasoline and diesel stocks at Soviet Far East ports in August and September and port congestion at Haiphong in June and July.

5. The USSR supplied 93% of the seaborne petroleum deliveries in 1971  85% from the Soviet Far East and the remainder from

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the Black Sea area. Soviet-flag vessels handled all of these deliveries, most of them in small tankers of 4,000 deadweight tons (DWT), and nine deliveries in tankers of more than 10,000 DWT. Eastern Europe continued to supply small quantities of specialty products, mostly lubricants.

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6. China's share of seaborne petroleum deliveries rose from 2% to 6%. The volume from the People's Republic of China (PRC) - 24,600 tons - was the highest since 1968. Some 21,000 tons arrived in three voyages by the Taiপিং, a Chinese-chartered Somali-flag tanker operated by a Macao firm. These were the first tanker deliveries from China since February 1969. Some drummed petroleum was delivered in 1971 by Chinese dry cargo vessels, mostly in a 3,000-ton shipment to Vinh.

7. Fragmentary information suggests that railborne petroleum deliveries in 1971 amounted to only about 15,000 tons, about the same as in the last several years. Some 5,000 tons, mostly solvents and a few lubricants, came from the Soviet Union. The Chinese sent 9,000 tons of unspecified petroleum by rail in February and March and about 500 tons of diesel fuel for flood relief in September.

Consumption

8. About 396,000 tons of petroleum products probably were consumed in 1971, slightly more than in 1970 (see Table 3). Increased activity necessitated by the extensive flooding from August through

Table 3

North Vietnam: Estimated Petroleum Supply  
and Consumption  
1971

	Thousand Metric Tons		
	<u>1969</u>	<u>1970</u>	<u>1971</u>
Stocks on hand, 1 January	<u>104</u>	<u>109</u>	<u>100</u>
Imports	389	375	406
Total supply	493	484	506
Less total consumption	384	384	396
Stocks on hand, 31 December	<u>109</u>	<u>100</u>	<u>110</u>

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November and the continuing industrial recovery caused the increase in consumption. The use pattern is indicated by the product mix of 1971 imports - 216,000 tons of diesel fuel, 136,000 tons of gasoline, 33,000 tons of kerosene, and 20,000 tons of lubricants and other specialty products. This mix is about the same as in 1970. Most of the diesel fuel and gasoline was consumed by military and public civil transport as well as by the construction industry. Only the kerosene was destined primarily for private consumption.

**Pipelines**

9. During 1971 the North Vietnamese made considerable progress in expanding their petroleum pipeline network (see the map). Work was started on an apparent extension from the northern terminus of the presently serviceable Panhandle system in the Vinh area to Hanoi -- a distance of about 250 km. By the end of the year, two segments of pipeline totaling 238 km had been observed in this area. The longer segment extends 225 km from a point 7 km south of Hanoi to a point 18 km north of Cu Dai (30 km northwest of Vinh). The shorter segment extends north from Cu Dai for 13 km. It is likely that the entire system connecting Vinh with Hanoi will be completed early in 1972.

10. About 20 km of pipe was laid during 1971 along the dual pipeline system leading from a small port near Bai Chai toward Hanoi. This extended the pipeline some 70 km west of Bai Chai to the Song Rang River, 9 km northwest of Hai Duong. As of February 1972, trenches had been dug to within 50 km of Hanoi. There are still several gaps in the first 70 km, primarily at river crossings.

11. At present, petroleum is delivered to the Panhandle system, primarily to the Quang Khe and Vinh areas, on small North Vietnamese coastal vessels loaded from larger foreign-flag tankers off Haiphong. When the new pipelines are completed, North Vietnam will be able to transport petroleum by pipeline from the port of Bai Chai to Hanoi and from Hanoi into Laos. During 1971, some dredging was noted at Bai Chai along the quay and in the nearby channel, a quay wall was constructed, and fill dirt was brought in. Considerable additional work, especially extensive deep dredging, will be necessary before this new oil port, with its shallow draft and limited docking facilities, can be used to optimum capacity.

12. A new spur of pipeline parallel to Route 137 southwest of Quang Khe was constructed during the year, perhaps part of an extension through the Ban Karai Pass into Laos. This spur would provide another feeder line into the Laotian logistical system.

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13. In 1971, reconstruction of damaged and destroyed petroleum storage facilities was accelerated and expansion of dispersed facilities continued. Total storage capacity was increased about 11% (see the tabulation) and by 1 January 1972 was almost two and one-half times the pre-bombing level.

	<u>Thousand Tons</u>		
	<u>1970</u>	<u>1971</u>	<u>1972</u>
Principal storage terminals	38	49	64
Dispersed storage			
Tanks	75	80	90
Drums	80	85	85
Military and industrial sites (tanks)	5	5	5
<i>Total</i>	<i>198</i>	<i>219</i>	<i>244</i>

14. More than 60% of the net increase in 1971 was brought about by restoration of the principal storage terminals (see Table 4). At the Haiphong terminal, five tanks totaling about 7,400 tons of new capacity were completed during the year, and another 4,000-ton tank neared completion. At Hanoi, four large vertical tanks and several small underground tanks were completed, adding 8,800 tons of capacity. At Bac Giang, four of the large vertical tanks were dismantled, reducing capacity by 1,100 tons. These tanks may have suffered some damage in the 1966 bombings and may not have been in use since that time.

Dispersed Storage SitesTanks

15. Photography [ ] revealed about 220 storage sites in widely dispersed groups of small horizontal tanks buried in shallow excavations and covered with earth. The total capacity of this dispersed storage is 90,000 tons, an increase of about 10,000 tons during 1971. Most of the new capacity is associated with the expansion of the pipeline systems. However, a sizable dispersed storage site, unrelated to any pipeline, was

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Table 4

North Vietnam: Location and Estimated Capacity  
of Principal Petroleum Storage Terminals

JCS Target Number	Name	Coordinates		Capacities as of 1 January (Metric Tons)			
		North	East	1966	1970	1971	1972
	Haiphong	20 52	106 39	40,620	9,800	12,700	20,100
	Hanoi	21 03	105 53	30,620	7,300	8,500	17,300
	Vinh	18 40	105 53	1,350	2,500	5,300	5,300
	Nguyen Khe	21 10	105 51	7,500	7,800	7,800	7,800
	Ha Gai	21 16	105 50	9,910	7,720	9,800	9,800
	Bac Giang	21 16	106 11	2,260	1,900	1,900	810
	Nam Dinh	20 25	106 11	0	600	2,900	2,900
	Do Son	20 42	106 47	2,860	0	0	0
	Viet Tri	21 17	105 26	1,400	20	20	20
	Duong Nham	21 01	106 30	4,130	0	0	0
	<i>Total</i>			<i>100,650</i>	<i>37,640</i>	<i>48,920</i>	<i>64,030</i>

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under construction near Kep Airfield at the end of the year. Near Trai Son, a segment of dual pipeline was extended in 1971 from a box canyon toward the main section of the pipeline, suggesting that the canyon may become the site of a sizable storage facility. The following tabulation shows the distribution and estimated capacity as of 1 January for the stated year (based on the midpoint of a range) of operational dispersed tank storage facilities:

Location	As of 1 January 1972		As of 1 January 1971	
	Thousand Tons	Percent of Total	Thousand Tons	Percent of Total
Above 21°	27	30	25	31
Between 20° 59' and 20°	20	22	16	20
Between 19° 59' and 19°	7	8	6	8
Between 18° 59' and 18°	19	21	15	20
Between 17° 59' and 17°	17	19	17	21
<i>Total</i>	<i>90</i>	<i>100</i>	<i>80</i>	<i>100</i>

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16. Small containers, principally 55-gallon drums, continued to be used extensively in North Vietnam for petroleum storage and distribution. At the outset of 1972, this capacity probably amounted to 85,000 tons.\* Many of these drums are sent southward for use by VC/NVA forces throughout Indochina. Since many of these containers probably never return to North Vietnam, the estimate of drum storage in North Vietnam probably is inflated.

17. The estimated capacity of the bulk petroleum storage facilities at military and industrial installations remained at 5,000 tons during 1971. The "floating" storage capacity represented by barges, rail tank cars, and tank trucks in North Vietnam is sizable but difficult to estimate. The operational pipeline system, another form of storage, could hold about 2,000 tons when filled.

Oil Exploration

18. Exploration for oil apparently is under way in North Vietnam, but there is no evidence of discoveries. At least two Romanian drilling rigs were delivered to North Vietnam in 1969

Prospects for finding oil in commercial quantities are uncertain; even if it is discovered, exploitation would take several years. Meanwhile, North Vietnam will continue to depend on outside sources for its petroleum.

\* This estimate is derived from the tonnage of petroleum shipped to North Vietnam in containers on dry cargo vessels since the beginning of 1966, reduced by 15% annually to reflect estimated losses from attacks, normal use, and accidental destruction.

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